2-1-1997

Using Alternative Feeding Management to Reduce Winter Feed Costs for Sheep

Jeff Held
South Dakota State University

COOPERATIVE EXTENSION SERVICE
SDSU

Extension Extra

ExEx 2022
February 1997

Animal Science/Sheep

COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

Using Alternative Feeding Management to Reduce Winter Feed Costs for Sheep

Jeff Held, Extension sheep specialist,
SDSU Animal and Range Sciences Department

A short supply of traditional forage sources and much higher prices means that sheep producers should consider alternative feedings management strategies to lower their production costs. For large-flock owners, substituting feeds could prove to be a wise choice. For many small-flock owners, simple physical adjustments in feeding management could move feed costs inline with previous production cycles.

Annual flock feed costs usually account for 50 to 70% of total expenses. However, very little time is actually spent determining the absolute dollar figure on a per ewe basis. For producers to lower feed costs in the current production cycle, it's logical to first pinpoint the feed costs last year -- or an average over the past few years -- to make a comparison. What were your ewe feed costs last year? $60, $80, or $100 per ewe?

Sheep producers often have ample high-quality alfalfa available at reasonable prices. In addition, large quantities of lower-quality grass hays are found in some areas of the country. Purebred and commercial producers with small flocks have grown accustomed to the vast supply of harvested forage. Feeding practices usually center on a high forage diet with supplemental energy and protein feeds.

During the current production cycle many producers are faced with less forage available and subsequently much higher prices for forage, regardless of the quality. In contrast, feed grains prices are about one-half of last summer's peak prices. Considering these basic economic facts on commonly used feeds, sheep producers can design diets that lower costs yet maintain the expected animal performance and flock health.

Reducing Forage Waste

In many operations, the greatest opportunity to reduce forage use and lower total ewe feed costs this winter is to reduce the amount of wasted forage. The main sources of forage waste are physical losses and over feeding.

Physical losses of forage can range from 10 to 40 percent, sometimes even higher. Altering management practices could significantly affect the amount of stored forage needed in an operation. Proper bunk design, manner of handling, and feed storage all can reduce the physical loss of forage.

Over feeding losses result from failure to match amount of feed to the level and stage of production.

Forage waste is likely to be greatest when physical and feeding losses occur simultaneously. For example, pregnant ewes with free access to large round bales can waste extreme quantities of forage, often 30 to 40 percent. Limiting the time ewes have access to the forage and/or using large bale feeders can significantly reduce forage loss yet maintain a healthy set of ewes.

Other ways to correct animal forage waste may include culling open ewes in mid-gestation through the use of ultra-sound technology and rearing single-bearing ewes separate from those with multiple lambs at side.

Limiting Forage Rations

Producers faced with tight forage supplies and high purchased-forage prices could consider limiting the quantity of forage offered and substituting into the ration more feed grains or alternative feed sources. During a

ewe's lactation, the standard feeding practice is to feed a set amount of feed grain, say 1 to 2 pounds per day, with free access to high-quality forage. This program usually meets the ewe's nutrient requirements for energy and protein very well. Producers can be equally successful using a limited forage scheme to match nutrients with ewe productivity.

Nutrient Requirements

Using a limited forage ration plan for ewes during the high-nutrient demands of late-gestation and early lactation requires that the producer be committed to making sure that certain nutrient requirements of the ewes are met. This ration plan might include lower-quality and unfamiliar ingredients.

Table 1 shows the energy (TDN) and crude protein (CP) requirements for 200-pound ewes during late gestation and lactation. Note the two-fold increase in crude protein requirement from gestation to lactation; the energy requirement is increased by 50 percent. Although other nutrients are not shown, a properly balanced diet includes supplementation of essential minerals and vitamins.

Ration Ingredients

Tables 2 and 3 show the TDN and crude protein content of common feeds for sheep and the cost per pound for these nutrients. Feed grains are a very good source of energy. Their cost relative to forages is usually much lower (Table 3). Feeds that naturally contain high levels of protein are typically the best buy when examined on the cost per pound of protein. Forages often are moderate in the levels of TDN and protein compared to other feeds and under normal prices are economical in diets.

Essentially, producers can build a least-cost ration for ewes in different phases of production based on this type of information. However, several restrictions need to be considered in diet development to insure healthy, productive ewes and lambs:

- Maintain digestive function by including at least 1 to 2 pounds of long-stemmed hay.
- Gradually shift ewes from high-forage to high-grain rations to reduce the incidence of acidosis.
- Use supplemental mineral and vitamin products made specifically for sheep.

Table 1. TDN and protein requirements for highly productive 200-lb ewes[a].

Item	Late -Gestation	Lactation
Total Digestible Nutrients (TDN)	3.0 lb	4.6 lb
Crude Protein (CP)	.5 lb	.99 lb
Expected dry matter intake (expressed as % of animal body weight)	3%	4%

[a]Requirements are based on sheep NRC (1985) recommendations, all expressed on dry matter basis.

Table 2. Common feedstuffs.

	TDN, %[a]	Crude Protein, %
	As-fed Basis	
Barley	76	11.9
Corn	77	8.9
Oats	68	11.3
Corn silage	23	2.7
Wheat	78	14.2
Alfalfa, mid-bloom	51	15.3
Grass hay	49	8.0
SBM	79	44.8

[a]Percent total digestible nutrients (TDN).

Example rations for late-gestation and lactation

Rations for highly productive 200-lb ewes in late gestation and early lactation are shown in Tables 4 and 5. In many areas this winter, a key feature in ration design is to extend the stored forage supply. Replacement forage costs have moved sharply higher over the winter months throughout the Midwest. In some regions, producers simply can not get to their feed due to deep snow cover. Many areas entered the winter feeding period with lower quality forage than is customary. **By shifting to higher grain rations, producers can use lower-quality forage -- and less of it -- and still meet the energy and protein needs for a highly productive ewe (Table 5).**

The most economical ration, using the ingredients listed and based on current ingredient prices, contains equal parts alfalfa and corn. The most significant variable in cost per head per day is the quantity of soybean meal needed to balance for protein. **Because of the level of protein supplement needed, using higher quality forage in the ration at a higher price can be more cost effective than using the same quantity of lower-quality, lower-priced forage.**

The relative value of many different feed grains compared to corn is given in Table 6. In addition to an economic comparison, consider specific precautions or processing requirements before incorporating feed grains into sheep

Table 3. Cost per pound of TDN or protein (as-fed basis).

Ingredient[a]	¢/lb	TDN ¢/lb	Protein ¢/lb
Barley	4.3	5.7	36.1
Corn	4.3	5.5	47.8
Oats	6.3	9.3	55.8
Wheat	6.3	8.1	44.4
Alfalfa	6.3	12.4	39.2
Grass hay	4.5	9.2	56.3
Soybean meal	14.0	17.9	31.3
Commercial ewe supp. 36%	21.0	26.3	58.3

[a]Feed	Cost
Barley	$2.05/bu
Corn	$2.40/bu
Oats	$2.00/bu
Wheat	$3.80/bu
Alfalfa	$125/ton
Grass hay	$90/ton
SBM	$280.00/ton
Commercial ewe supplement	$21/cwt

rations. Check with your county Extension agent or allied feed professional for assistance.

Alternative Feeds

Many possible feed ingredient combinations can be used in sheep rations. Whether a particular feed fits into your operation will depend on product availability and cost plus the physical feasibility of delivering feed to the animals. Listed below are possible forages, feed grains, and protein feeds that could be utilized in sheep rations:

Forages

Alfalfa
Alfalfa pellets
Cornstalks
Corn silage
Soybean hulls
Sweet corn silage
Millet hays
Oatlage
Grass hays including conservation reserve program (CRP) hays

Forage testing is especially critical when designing sheep diets based on these feeds, since the nutrient profiles vary widely within and across these forage sources. Many forages would be adequate for dry ewes or ewes up to late gestation. However, significant nutrient deficiencies will show up when a lactation diet is needed. Be assured that lower-quality forages will require supplementation with protein feeds, vitamins, and minerals during lactation to meet the ewe's nutritional requirements.

Handling different feeds in your operation may require equipment purchases. Does the lower-valued feed create enough savings to justify long-term capital investment? Above all, does this forage base add more chore time than you can afford?

Feed grains

Barley
Corn
Oats
Wheat
Milo

Protein feeds

Soybean meal
Commercial supplement
Corn gluten feed/meal
Distillers grains
Cotton seed meal

The relative value of a feed compared to other ingredients can be computed using ration-balancing programs. Ask your Extension agent or specialist for available software programs.

Summary

Sheep producers could save big dollars this winter by using alternative feeding management strategies to lower flock feed costs and stretch their forage supplies. The main strategies to consider:

- Reducing forage waste, and/or
- Moving to a limited-forage ration.

Evaluate any major changes in feeding management early and often:

- Can you make the feeding change without reducing flock performance and/or health status?
- Is it economically feasible for you to make the capital investment needed to handle the alternative program?

Table 4. Example rations for 200-lb ewes in late-gestation expected to produce 180 to 225% lamb crop (as-fed basis).

	Late-Gestation Ration[a]			
Ingredient	1	2	3	4
Alfalfa, mid-bloom (16% CP)	4.0		2.0	
Grass hay (8% CP)		4.0	2.0	
Corn Silage				12.0
Shelled Corn (9% CP)	1.5	1.5	1.5	
Soybean Meal (44.8% CP)		.7		.7

[a]Last 4 to 6 weeks of gestation.

Table 5. Example rations for 200-lb ewes, twin lambs, first 8 weeks of lactation (as-fed basis).

	Standard Rations			Limit Forage Rations		
Ingredient	1	2	3	4	5	6
Alfalfa, mid-bloom (16% CP)[a]	6.0	3.0		3.5	1.75	
Grass hay (8% CP)		3.0	5.0		1.75	3.5
Shelled Corn (9% CP)	1.5	2.0	1.25	3.5	3.5	3.5
Soybean Meal (44.8% CP)	.2	.3	1.5	.2	.75	1.0
Cost/hd/day[b] (¢)	.47	.45	.49	.39	.44	.45

[a]Alfalfa pellets could be substituted in part or whole.
[b]Alfalfa at $125/ton
Grass at $90/ton
Shelled Corn at $2.40/bu
Soybean Meal at $280/ton

Table 6. Relative value (price per bushel) of the various grains compared to corn for feedlot cattle[a].

	Corn price per bushel						
Grain	2.00	2.25	2.50	2.75	3.00	3.25	3.50
Barley	1.57	1.76	1.96	2.16	2.35	2.55	2.74
Ear corn	1.41	1.58	1.76	1.94	2.11	2.29	2.46
Millet	1.87	2.10	2.34	2.57	2.81	3.04	3.27
Milo	1.81	2.03	2.26	2.49	2.71	2.94	3.16
Oats	.91	1.02	1.14	1.25	1.36	1.48	1.59
Rye	1.83	2.06	2.29	2.51	2.74	2.97	3.20
Wheat	2.11	2.37	2.63	2.89	3.16	3.42	3.68

[a] Relative value is determined by converting to cost per pound, then adjusting for TDN differences among feed grains.

COOPERATIVE EXTENSION SERVICE SDSU

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA. Mylo A. Hellickson, Director of CES, SDSU, Brookings. South Dakota State University is an Affirmative Action/Equal Opportunity Employer (Male/Female) and offers all benefits, services, education and employment opportunities without regard for ancestry, age, race, citizenship, color, creed, religion, gender, disability, national origin, sexual preference, or Vietnam Era veteran status.

150 copies printed by CES at a cost of 16 cents each. February 1997.